



DAMES & MOORE

FINAL REPORT EXCAVATION OF TEST PITS SCP SITE CARLSTADT, NEW JERSEY

AUGUST 29, 1989 JOB NO. 14485-002-010



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INTRODUCTION

GENERAL

The following report describes the scope of services provided by Dames & Moore to excavate test pits at the SCP site in Carlstadt, New Jersey, and our findings and conclusions relative to the physical nature of the surface fill at this site. Our program of investigation was conducted in accordance with the technical approach described in our Revised Confirming Proposal dated July 13, 1989, and included the excavation and logging of test pits, development of our conclusions and recommendations, report preparation, and related project management and coordination activities.

PURPOSE AND SCOPE

The purpose of our test pit site investigation was to provide a better estimate of the rubble in the shallow fill unit at the site.

To accomplish this purpose, we performed a scope of work which included:

- 1. Selecting specific locations for test pits, which considered the results of geophysical surveys, on a distribution of approximately four test pits per acre;
- 2. Selected a qualified excavation contractor to perform the test pits;
- 3. Conducted the test pit investigation under Level B health and safety requirements;

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- 4. Observed the materials encountered in the test pits with emphasis on their type, size and quantity; and prepared appropriate test pit logs;
- 5. Evaluated and synthesized the test pit data to consider patterns within the surface fill unit; and
- 6. Prepared this report of our investigation and its findings.

Further details regarding our specific test pit investigation and our findings are presented in the remainder of this report.

TEST PIT INVESTIGATION PROGRAM

FIELD INVESTIGATION ACTIVITIES

This test pit field investigation program was performed at the SCP Carlstadt site at 216 Patterson Plank Road, Carlstadt, New Jersey (see Plate 1) on July 20, 21, 24 and 25, 1989. All intrusive investigation activities were conducted under Level B personnel protection and monitoring equipment, and in accordance with an approved Project Health and Safety Plan. The test pits were excavated by backhoe, using a backhoe operator and two helpers provided by Clean Venture. A Dames & Moore Senior Geologist technically directed the field operations, identified the materials encountered in the test pits, and prepared appropriate test pit logs (see Appendix A). A Dames & Moore technician provided on-site assistance in monitoring the air quality during test pit excavation operations, using a Century Organic Vapor Analyzer (OVA) and an explosimeter. Firebusters Corporation provided appropriate personnel and materials to apply foam on the excavated materials and/or test pit surfaces, when required, to control the release of volatile vapors to the atmosphere. Additionally, a contract site monitor from Ebasco, Inc. was present during the field investigation to observe these activities on behalf of the USEPA.

Twenty-three test pits were excavated for this field program, at the locations indicated on Plate 1, Test Pit Location Plan. Each test pit was excavated approximately 3 feet wide by 10 feet long. While it had been intended

to excavate all of the test pits through the surficial fill to encounter the underlying peat stratum (generally encountered in the test pits at a depth of approximately 8 feet), some of the test pits were terminated at shallower depths due to the presence of large obstructions and/or to control the release of volatile vapors from these test pits. Water was encountered at relatively shallow depths in most test pits, which caused some caving in the sides of the test pits, and obscured observation of the fill materials as they were being explored. Upon completion, all test pits were backfilled.

FINDINGS AND CONCLUSIONS

NATURE OF THE FILL

The nature of the surficial fill at the SCP Carlstadt site was explored by excavating 23 test pits at the locations indicated on Plate 1. Our conclusions relative to the type, size and quantity of the fill components have been developed from these test pit data, and other direct observations during the field investigation.

In general, the fill material can be characterized as a very heterogeneous mixture of very coarse building/construction/demolition debris (about 60%) and soil/sludge (about 40%). Most of the debris is quite large, in that we estimate approximately 80 percent of the debris measures over 6 inches in size and approximately 30 to 40 percent of that material can be measured in terms of feet. The longest piece of debris encountered consisted of piping, the full length of which could not be readily determined, since part of the pipe remained embedded in the walls of the test pit. Some of the more common debris articles which we encountered essentially throughout the site are: bricks; rocks and building stone ranging from 2 inches up to 4 feet in size (although more commonly 4 to 8 inches in size); 6-inch deep steel beams; lumber including lath and 3-foot to 6-foot long by 6-inch wide boards; and broken concrete ranging from 6 inches by 6 inches to 1 foot by 3 feet in size. We also observed that the fill contained (without a discernible distribution pattern) pieces of scrap metal including various fittings, sheet metal and pipes of various size.

All of these items of debris were observed to exist within a matrix of brown or black soil. Overall, the percentage of soil comprising the matrix of the fill stratum was observed to vary both horizontally and vertically from about 5 percent to 60 percent, and is estimated to average at about 40 percent across the site, with debris comprising the remaining 60 percent.

No significant distribution patterns of debris type were discerned during this study, but a few more localized concentrations of debris have been estimated from the test pit data, as described below. The approximate areas of such concentrations have been indicated geographically on Plate 1.

Drums

A crushed drum was encountered at a depth of about 4 feet below grade, in Test Pit No. 1, and several crushed drums were encountered in Test Pit No. 9.

Tiles

Ceramic tiles were noted at a depth of 3 feet to 6 feet in Test Pit Nos. 3 and 4, while roofing shingles were noted at a depth of 6 feet in Test Pit Nos. 1, 3 and 8. All of these locations are located on the side of the site adjoining Gotham Parkway.

Stones

Test Pit Nos. 13 and 15, located on the side of the site adjoining Carolina Freight, contained an abundance of large building stone (1 to 4-foot in size). Similar 4 to 6-inch size stones were encountered in abundance in Test Pit No. 14.

Metal

A great deal of metallic debris was encountered in Test Pit No. 5 near Peach Island Creek. Although metal fragments were found to be fairly common throughout the site, this location was notable in that it contained more large pieces of metal than in other test pits, including items such as an I-beam, large quantities of BX-cable, a wheel (with tire) and piping. All of these items were effectively intertwined, so as to offer considerable resistance to excavation by the backhoe bucket.

Sludge

A soft material having a sludge-like consistency was encountered in the test pits at an average depth of 3 feet in the vicinity of the site boundary common to Carolina Freight. The depth to which this sludge extends could not be well determined, since all excavations were terminated within the fill stratum to limit the release of volatile vapors (as detected on the OVA).

Slabs

Concrete slabs were encountered approximately 2 feet below grade in Test Pit Nos. 9 and 17. However, it could not be readily determined if the slabs encountered at each of these locations are continuous or separate.

Fill Thickness

Based on our observation of the materials encountered in the test pits, the inferred patterns of the fill debris gave the appearance of having been spread and reworked by heavy equipment, rather than having been placed as discrete piles which might have been dumped; although the more concentrated areas of large stone and metallic debris may be exceptions to this theory. The upper portion of the debris often gave the appearance of having been compacted. Overall, the fill stratum was found to be generally about 7 to 8 feet thick, based on the excavation depths required to reach the underlying peat. Although the lower surface of the fill was found to be fairly regular at most test pit locations, some exceptions were observed; in that Test Pit No. 4 encountered the peat at approximately 6 feet and Test Pit No. 13, excavated to approximately 12 feet, did not encounter the peat within the depths explored. Additionally, the upper surface of the fill is fairly regular, except for several 2 to 3-foot high mounds of similar fill materials located near the edges of the site adjoining Peach Island Creek and Carolina Freight.

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The following are attached and complete this report:

Plate 1 - Test Pit Location Plan

Appendix A - Test Pit Logs

APPENDIX A TEST PIT LOGS

APPENDIX A

TEST PIT LOGS

Test Pit 1

- 0'-1' Soil, gray, black stained
- 1'-2' Red bricks
- 2'-3' Dark gray soil (40%) with assorted highly variable debris (60%) including: lumber, metal fragments, partial flattened drum (at 4'), shingles, possible shredded tires. Walls of excavation caving.
- 6'-8' Peat: very dark brown, roots clearly visible. Large log 8"-12" in diameter at 6 feet.

Test Pit 2

0'-4' Greatly varied assorted debris - 3"-6" metal fragments, red bricks, 2"-6" stone, very dark gray soil, and assorted wood fragments in roughly equal proportions.

Dark brown water encountered at about 2 feet. Release on OVA measured up to 100 ppm - stopped excavation and applied foam. OVA reading dropped to 0 ppm before foam was fully applied.

- 0'-3' Soil (70%) and 2"-6" rocks (30%), unconsolidated, brown.
- 3'-6' Ceramic tiles (70%), very dark gray to black soil (15%), rags, plastic and miscellaneous unidentified small fragments (15%).

- 6'-7' Shingles (probably roofing type) (80%), substance which looks like dried oil mixed with soil and sludge (20%).
- 8' Wood various sizes, 2-inch chips to 3-foot boards.
- 8'-10' Peat: brown, roots and leaves visibly in place.

- 0'-1' Broken and crushed cinder blocks.
- 1'-3' Dark brown soil (40%), with 3"-8" rocks (20%), bricks (20%), and (20%) pipe, wood and metal fragments.

Water encountered at 3 feet.

- 3'-6' Tiles (50%), bricks (30%), scrap metal (20%), backhoe could not penetrate scrap metal and had to be moved excavation extended as a result.
- 6' Peat: dark brown, roots visible, oil-like substance seeping in.

- O'-3' Assorted and highly variable construction debris, including BX-cable, wheel and tire, bricks, wood varying in size from chips to 3-foot boards, I-beam, pipe varying in diameter from 1/2-inch to 2 inches, 2 to 6-foot long. Debris is also very interwoven creating excavation problems.
- 3'-6' Debris and sludge. Cannot identify debris type due to sludge covering. 60% debris, 40% sludge.

- 6'-8' Bricks with 10-20% debris, black water in pit obscures relationships.
- 8' Peat.

0'-4' Soils (60%) with 3-inch to 12-inch rocks and broken masonry 1 to 2 feet across (40%).

Water encountered at 3 feet. Volatile vapor releases noted on OVA. Pit foamed and backfilled.

Test Pit 7

- 0'-2' Bricks and masonry. At 2 feet, black soft viscous substance (probably tar or asphalt).
- 2'-6' Soil, rocks and bricks, flattened 5-gallon bucket.
- 6'-8' Black soil with lumber.
- 8' Peat: brown, roots visible.

- 0'-1' Brown soil with black streaking.
- 1'-3' Very coarse sand and gravel with rags.
- 3'-4' Very coarse sand with red clay and a few bricks.
- 4'-6' Lumber (30%), 3'-4' long boards, lath. Scattered rags (10%). Shingles at 5 feet (40%), soil (20%).

Clear water coming in at 6 feet.

7' Peat: brown.

Test Pit 9

- 0'-2' Brown soil (30%), with bricks, 4"-8" rocks, lumber 3 inches to 2 feet, portions of soil stained bright yellow.
- 2' Concrete slab, approximately 2 to 4 inches thick after considerable effort, broke apparent end off.
- 2'-4' Soil with crushed drums. Volatile vapor releases noted by OVA. Excavation terminated. Foamed pit, backfilled test pit, and foamed area.

Test Pit 10

0'-4' Dark brown soil (30%) with rocks up to 8 inches across (20%), bricks (25%), cement blocks (25%) 4 inches to 1 foot.

Water encountered at 3 feet. Volatile vapor releases noted by OVA. Excavation terminated. Foamed pit, backfilled test pit and foamed area.

- 0'-2' Stone (2") and dark brown soil (50-50 mixture).
- 2'-4' Yellow brown sand, water entering at 3 feet.

- 4'-8' Dark brown soil with red bricks (50-50 mixture).
- 8' Peat.

- 0'-.5' Yellow soil, limonitic (i.e. not stained).
- .5'-7' Cinder blocks, bricks, 2"-8" stone, concrete pieces about 6 to 12 inches across, roughly equal percentages. 5%, or less, soil.

OVA at 3' reading 10 ppm.

Water encountered at 5 feet. Volatile vapor releases noted by OVA. Excavation terminated, foamed and backfilled.

- 0'-2' Brown soil (60%) and 1"-2" stone (40%), timber, black colored water with oil slick at 2 feet.
- 2'-12' Brick (80%), assorted stone and timber (10%), black soil (10%). Pulling up very large building stones 2', 3' and 4' long observation difficult due to black water in test pit.
- 12' Backhoe at limit of its reach capability at 12 feet. Test pit terminated.

- 0'-1' Green clay.
- 1'-3' Red sandy clay.
- 3'-3.5' Black sand, red water entering at 3 feet.
- 3.5'-8' Red sand, and 4"-6" tabular shape stones, water flowing in freely.
- 8' Peat.

Test Pit 15

- 0'-2' Red soil, some bricks (less than 5%), red colored water at 2 feet.
- 2'-4' Bricks (80%), 1/2-inch diameter pipes, about 3 feet long (5%), assorted wood fragments (15%). Scraping sound cannot see source because of water in pit. Large stone (over 2 feet long) coming up and falling back in, triangular shaped stone 2.5 feet across, and 1 foot by 2.5 feet pillar-shaped stone. Also: rebar, 8 feet long, bent I-beam, 4-foot wide bent and folded sheet metal, bubbles coming up through water. Terminated excavation, foamed and backfilled test pit.

- 0'-3' Soil: brown and light orange.
- 3'-4' Red clay stone with soil (40-60 to 50-50 ratio). Brown water at 3.5 feet. Volatile vapor releases noted on OVA. Excavation terminated. foamed and backfilled test pit, and foamed area.

0'-2' Soil and gravel (50-50 mixture). At 2 feet encountered concrete slab, moved approximately 6 feet away (17b) attempted again. Volatile vapor releases noted on OVA. Terminated TP-17b, foamed and backfilled excavation. Made third attempt, approximately 20 feet away (17c) slab still present.

Test Pit 18

1st Attempt:

0'-2' Gravel, stone (8 inches across), soil (35%, 35%, 30%). Encountered concrete slab. Examined adjacent exposed slab, moved location roughly 10 feet south.

2nd Attempt:

- 0'-3' Soil 50%, brick 20%, stones (3"-8") 30%. Water at 3 feet; brown with very dark brown oil-like slick.
- 3'-5' Same material as above, but observation obscured by dark water. At 4-5 feet, volatile vapor releases noted on OVA. Terminated excavation, foamed and backfilled test pit.

Test Pit 19

0'-3' Dark brown soil (70%), 6"-8" rocks or brick (25%). Wood - various sizes (5%).

Water with sheen. Oil-like sludge on excavated material. Volatile vapor releases noted on OVA. Terminated excavation. Foamed and backfilled test pit, and foamed area.

- 0'-4' Brown soil (85%), 4 to 8-inch diameter rounded cobbles (10-15%), occasional pieces of 4" x 6" wide lumber.
- 4'-7' Sludge and soil mixture, approximately 15% piping and fittings.
- 7' Soil. Volatile releases noted on OVA. Excavation terminated, foamed and backfilled pit.

Water accumulated at 3 feet, oil sheen observed.

Test Pit 21

0'-3' Crushed cinder block at surface. Soil (60%), 4-inch to 8-inch stone and bricks (35%), wood, plastic and sludge (5%). Volatile vapor releases noted on OVA. Terminated excavation. Foamed and backfilled test pit.

Test Pit 22

0'-3' Soil (70%), brick/stone (30%).

Black sludge, OVA reading 100-150 ppm, stopped excavation, foamed and backfilled pit, foamed again.

Test Pit 23

0'-3' Brown soil (60%) with bricks and copper green colored stone (40%). OVA peaking to 800 ppm, sustaining 200 ppm, immediately stopped excavation, foamed and backfilled, foamed again.